	
CHAPTER 2.1.10.5 ATLANTIC BLACK SKIPJACK	AUTHORS: J. VALEIRAS and E. ABAD
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2.1.10.5 Description of Atlantic Black Skipjack (LTA)

1. Names

1.a Classification and taxonomy

Species name: *Euthynnus alletteratus* (Rafinesque 1810)

ICCAT species code: LTA

ICCAT names: Atlantic black skipjack (English), Thonine (French), Bacoreta (Spanish)

According to Collette and Nauen (1983), the Atlantic black skipjack is classified as follows:

- Phylum: Chordata
- Subphylum: Vertebrata
- Superclass: Gnathostomata
- Class: Osteichthyes
- Subclass: Actinopterygii
- Order: Perciformes
- Suborder: Scombroidei
- Family: Scombridae

1.b Common names

List of vernacular names used according to ICCAT, FAO and Fishbase (www.fishbase.org). The list is not exhaustive and some local names might not be included.

Albania: Trup.

Angola: Melva, Merma.

Bahamas: Little tuna.

Brazil: Albacora, Bonito, Bonito-cachorro, Bonito-pintado, Bonito-rajado, Curuatá-pinima, Merma.

Cape Verde: Apluro, Bacoreta, Barrilete, Cachorra, Cachorreta, Cachorrinha, Judeu, Merma, Thonine.

China Main: 小鮪

Cote d'Ivoire: Bokou-bokou, Bonita, Klewe.

Croatia: Luc.

Cuba: Bonito, Comevíveres.

Denmark: Almindelig, Thunnin Thunnin.

Dominican Republic: Bonito.

Egypt: Tunna.

Finland: Tunniina.

Former USSR: Atlanticheskyj malyj tunets, Malyj tunets, Tsyatnystyj atlanticheskyj tunets.

France: Thonine commune.

Germany: Falscher, Bonito, Thonine.

Ghana: El'la, Poponkou.

Greece: Τοννάκι, Τουνίνα, Τονίνα, Τάσκα, Καρβούνη, Καρβούνα, Λεκατίκι, Karvouni.

Guinea: Makreni.

Israel: Tunnit atlantit.

Italy: Alacurza, Aleterato, Alletterato, Allittirato, Allittiratu, Carcana, Cuvarito, Cuvaritu, Leterato, Letterato, Lettirado, Litterato, Littiratu, Nzirru, Palametidd, Pizziteddu, Sanguinaccio, Scampirru, Tonnella, Tonnetto, Tonnina, Tunna, Tunnina.

Japan: Taiseiyu-yaito, Taiwan yaito.

Lebanon: Balamydah.

- Malta:** Kubrit, Kubrita, Tonina.
Martinique: Bonite queue raide, Gueule molle, Thonine, Thonine commune.
Mauritania: Atlantic little tuna, Bacorète, Corrinelo, Labeidna, Ouolass, Ravil, Thonine.
Mexico: Bacoreta, Bacoreta, Bonito.
Monaco: Tunina.
Morocco: Lbakoura.
Nicaragua: Bacoreta.
Norway: Tunnin.
Poland: Tunek atlantycki.
Portugal: Atún, Fule-fule, Melena, Melva, Merma.
Puerto Rico: Bonito.
Romania: Ton mic.
Sao Tome Prn: Fulu fulu.
Senegal: Deleu deleu, Oualass, Thonine, Walas.
Sierra Leone: Little tuna.
Slovenia: Pegasti tun.
South Africa: Atlantic little tuna, Atlantiese kleintuna, Merma.
Spain: Bacoreta.
St Helena: Little tunny.
Sweden: Tunnina.
Togo: Bonite, Kpoku.
Trinidad Tobago: Bonito.
Tunisia: R'zem, Toun sghir.
Turkey: Yaziliorkinos.
Ukraine: Malyi zapadnyi tunets, Pyatnistyi tunets.
United Kingdom: Atlantic little tunny, Little tuna, Little tunny.
United States of America: Bonito, False albacore, Little tuna, Little tunny.
US Virgin Islands: Little tuna.
Venezuela: Atuncito, Bonito, Cabaña pintada, Carachaza, Carachana pintada.

2. Identification

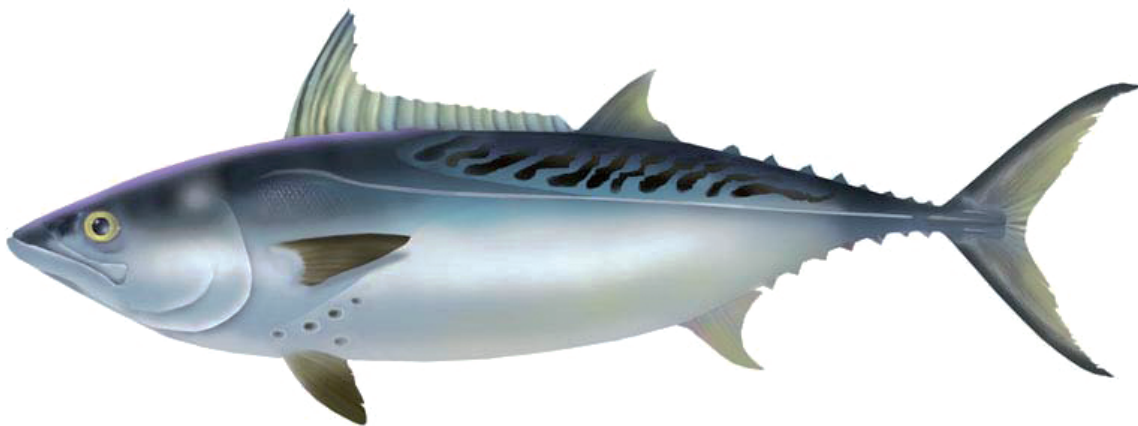


Figure 1. Drawing of an adult *Euthynnus alletteratus* (by A. López, 'Tokio').

Characteristics of *Euthynnus alletteratus* (see Figure 1 and Figure 2)

Atlantic black skipjack is a small tuna species. Maximum size in the Mediterranean is about 100 cm fork length and about 12 kg weight. In the tropical eastern Atlantic length is 90 cm. Common size is 85 cm and about 7 kg (Collete and Nauen 1983; Collete 1986).

Colour:

- Dark blue on dorsal parts with a complicated striped pattern not extending forward beyond middle of first dorsal fin. Silvery white on ventral and lower sides.
- Several characteristic dark spots between pelvic and pectoral fins (not always very conspicuous).

External:

- Body robust and fusiform.
- Body naked, except for the corselet and lateral line.
- Caudal peduncle slender, with a prominent median keel between smaller keels.
- Two dorsal fins separated by a narrow space. Anterior spines of first dorsal fin large, giving the fin a strongly concave outline. Second dorsal much lower than first, followed by 8 finlets.
- Anal fin followed by 7 finlets.
- Short pectoral fin. Pectoral rays: 26-27.
- Dorsal spines: 10-15.
- Anal rays: 11-15.
- Gillrakers on first arch: 37-45.
- Inter-pelvic process small and bifid.

Internal:

- Swimbladder absent.
- Liver with right lobe much longer than left and middle lobes.
- Vertebrae: 37-39.
- Incipient protuberances on 33rd and 34th vertebrae.
- Cutaneous artery present.

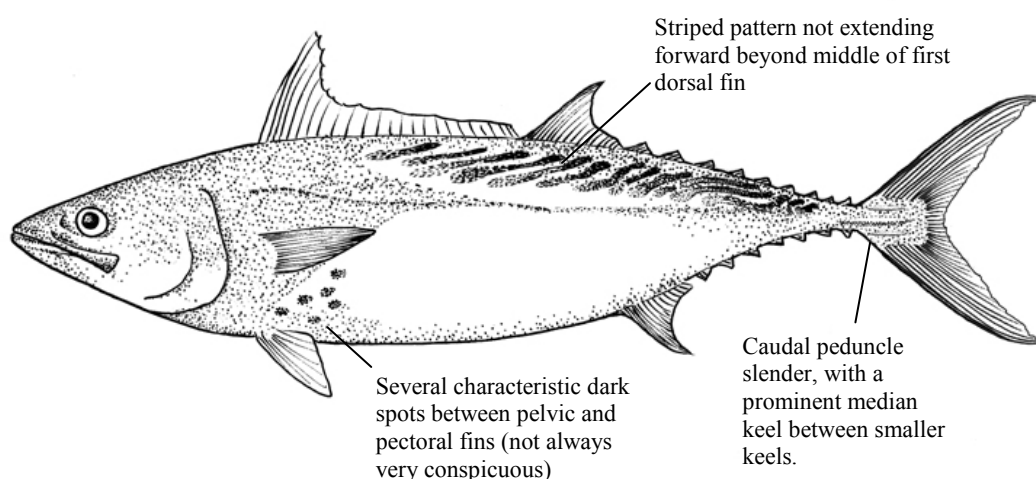


Figure 2. Synthesis of the most outstanding characteristics of *Euthynnus alletteratus* (by A. López, 'Tokio').

3. Distribution and population ecology

3.a Geographical distribution

Distributed in both sides of the tropical and subtropical Atlantic Ocean, including the Mediterranean, Caribbean Sea and Gulf of Mexico (**Figure 3**).

In the Eastern Atlantic is reported as far north as Skaggeiak and as far south as South Africa, including the Mediterranean and Black Sea. But it is rare north Iberian Peninsula. In the western Atlantic off the east coast of the United States and Canada has been recorded from Cape Cod. Off the Atlantic coast of South America the species is recorded to Brazil.

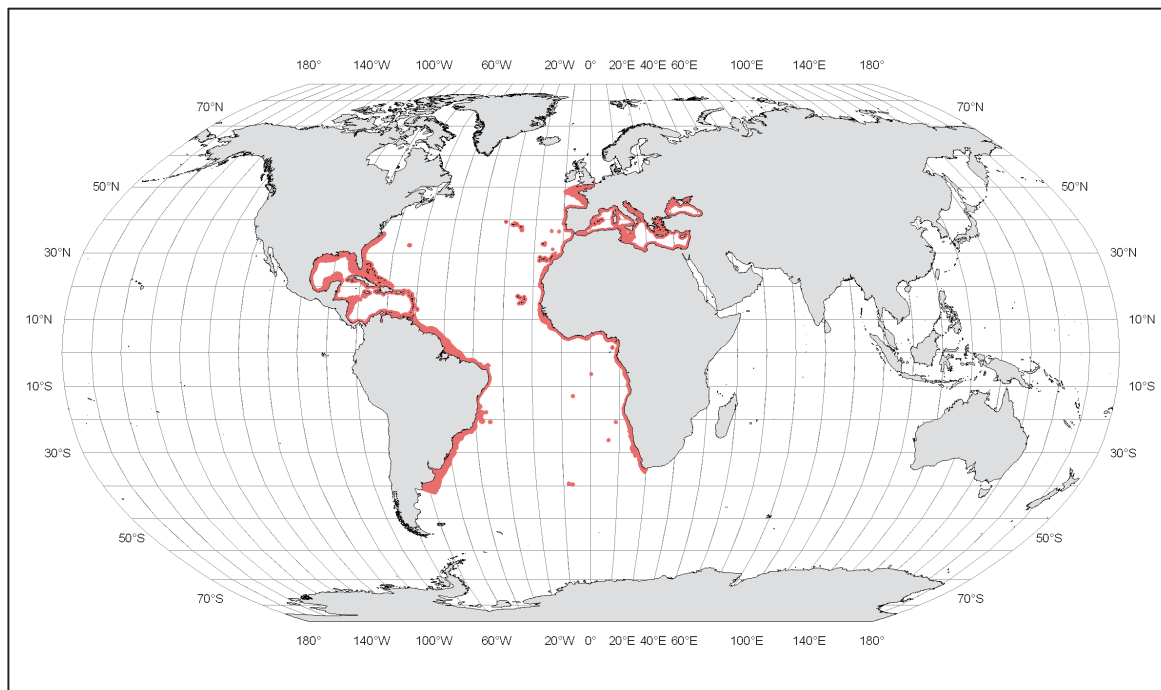


Figure 3. Geographical distribution of little tuna (FAO, c2001-2009. Compilation of aquatic species distribution maps of interest to fisheries. In *FAO Fisheries Department* [online]. Rome. [15 sept. 2009]. http://www.fao.org/fishery/collection/fish_dist_map).

3.b Habitat preferences

Atlantic black skipjack is an epipelagic and neritic fish typically occurring in inshore waters. More coastal than other tuna species. This species lives in schools by size together with other scombrid species, but has a tendency to scatter during certain periods of the year. Usually found in coastal waters with swift currents, near shoals and around the warmer waters of thermal fronts and upwellings. It is most abundant in the tropical Atlantic where the water temperature is 24° to 30° (Chur 1973).

3.c Migrations

Little is known about little tuna movements. Less migratory than other tuna species.

3.d Recruitment

Knowledge of the early life stages in tunas is very scarce. It is assumed that larval period is short. During the first life stages little tuna are not caught and juvenile life history is unknown. Immature fish first appear in fishery from around 30 cm of fork length.

4. Biology

4.a Growth

Atlantic black skipjack age determination and growth have been studied by means of different methodologies: otoliths, vertebrae, spines and size frequency. The maximum reported age is 8 years (Landau 1965; Jonhson 1983; Cayrè *et al.* 1993; Kahraman 1999).

Kahraman and Oray (2001) found 6 age groups (0+/5+) for the Aegean Sea and 9 age groups (0+/8+) for the eastern Mediterranean. Von Bertalanffy growth parameters are showed in **Table 1** for different areas. Rodriguez-Roda (1979) studied vertebrae and length frequencies and developed a growth equation based on specimens from western Mediterranean and Atlantic area near Gibraltar strait. Recently, Santamaria *et al.* (2005) presents an estimate of growth rate, based on otolith analysis of juvenile fish from Mediterranean Sea (18-69 days) were 3.96 mm.

Table 1. Growth parameters for Atlantic black skipjack (L_{∞} in cm, K in y^{-1} , t_0 in y).

Growth Parameter			Area	Country	Reference
L_{∞}	k	t_0			
99.5	0.315			Senegal	Diouf, 1980
112	0.126		off Senegalese coast	Senegal	Cayrè and Diouf, 1983
115	0.19	-1.71	East Atlantic	Spain	Rodriguez-Roda, 1979
111	0.22			Tunisia	Hattour, 1984
136	0.164			Tunisia	Hattour, 1984
123	0.127	-3.84	Mediterranean Sea	Turkey	Kahraman and Oray, 2001
128	0.106	-4.18	Aegean Sea	Turkey	Kahraman and Oray, 2001

4.b Length-weight relationship

Published length-weight relationships for several geographical areas are showed in **Table 2**.

Table 2. Different Atlantic black skipjack length-weight relationships published.

Equation	N	FL range (cm)	Sex	Area	Country	Reference
$W = 0.0000575 \times FL^{2.697}$	145	55-85	-	Aegean Sea	Turkey	Kahraman and Oray, 2001
$W = 0.0000476 \times FL^{2.725}$	1454	52-97	-	Mediterranean Sea	Turkey	Kahraman and Oray, 2001
$W = 0.0163 \times FL^3$	100	47-101	-	Mediterranean	Tunisia	
$W = 0.0138 \times FL^{3.035}$	1808	20-90	All	Coasts off Senegal	Senegal	Diouf, 1980
$W = 0.044098 \times FL^{2.7549}$	217	56-86	All	Western Mediterranean	Spain	Macías et al, 2006
$W = 0.0001 \times FL^{2.4683}$	63	58-83	All	Eastern Mediterranean	Turkey	Kahraman, 2005
$W = 0.00002 \times FL^{2.9563}$	41	34-63	All	Eastern Mediterranean	Cyprus	Kahraman, 2005
$W = 0.00002218 \times FL^{2.914897}$	325	40-90	All	Western Mediterranean	Spain	Rodriguez-Roda, 1966

4.c Reproduction

Spawning

Atlantic black skipjack is a multiple spawner with asynchronous oocyte development that carried out several spawning batches by reproductive season. Extended spawning period from April to November in North Atlantic. In tropical African coasts the spawning occurs from January till May (Chur 1973; Rudomiotkina 1986). In western Mediterranean the spawning period is from May to July.

Maturity

Sexual maturity is reached at 56 and 57 cm length off southern Spain (Rodriguez-Roda 1966), 44 and 42 in the Gulf of Guinea (Chur 1973) for males and females respectively, 40 cm off Senegal, and 35 cm off Florida.

Sex ratio

The sex ratio in juvenile stages is approximately 1:1. However, a higher presence of males in the larger length classes predominate in the catches.

Fecundity

Individual partial fecundity, defined as the number of ovocytes of the last mode present in the ovary just before a spawning, varies from 70,000 to 2,200,000 eggs (size range: 30-78 cm) in Senegal (Diouf 1980).

4.d First life stages

Eggs and larvae

Eggs are pelagic, 0.84-0.94 mm of diameter and with one oil globule (0.24-0.34 mm of diameter). The yolk is homogeneous. The hatch size is 2.5 mm. The embryo presents light yellow chromatophores: 1-3 on oil globule, 2 between oil globule and ventral surface of notochord, 1 posterior to each optic cup, 2 block-shaped at anterior end of notochord. Larvae present pigmentation on forebrain, midbrain, hindbrain, tips of both jaws, ramus of lower jaw, cleithral symphysis ventral margins of tail and D₁ fin (Richards 2005).

4.e Diet

Adult fish is an opportunistic predator which feeds on virtually everything within its range, i.e. crustaceans, fishes, squids, heteropods and tunicates. Clupeoid fishes are particularly important food components (Etchevers 1976; Menezes and Aragao 1980). In the eastern tropical Atlantic feeding preys from stomach contents include crustacean (Isopoda, Decapoda, Stomatopoda, Anomura), cephalopods (Sepia sp., Loligo sp.), pelagic fish (Clupeidae, Scombridae, Thunnidae, Carangidae) and grounfish (Mullidae, Sparidae, Priacanthidae) (Chur, 1973).

Predators: sharks, yellowfin tuna and billfishes.

4.f Physiology

There is a lack on information on this topic.

4.g Behaviour

Little is known about little tuna behaviour patterns.

4.h Natural mortality

There is a lack on information available on this biological parameter.

5. Fisheries biology

5.a Populations/Stock structure

There is little information available to determine the stock structure of Atlantic black skipjack . Current information does not allow for an evaluation of stock status.

5.b Description of fisheries: Catches and effort

Atlantic black skipjack are exploited mainly by coastal fisheries and often by artisanal fisheries. It is caught by multispecies fisheries as traps, beach seines, gillnets, purse seines, trolling and pole line. Also is a game fish in North American coasts.

Annual catches reach 29,855 t in 1989 (**Figure 4**). Average estimated landings from 1980 to 2004 is 15,808 t. Average catch in Mediterranean is 20,071 t. Unknown quantities of little tuna are landing by artisanal fisheries in the Atlantic (ICCAT 2006).

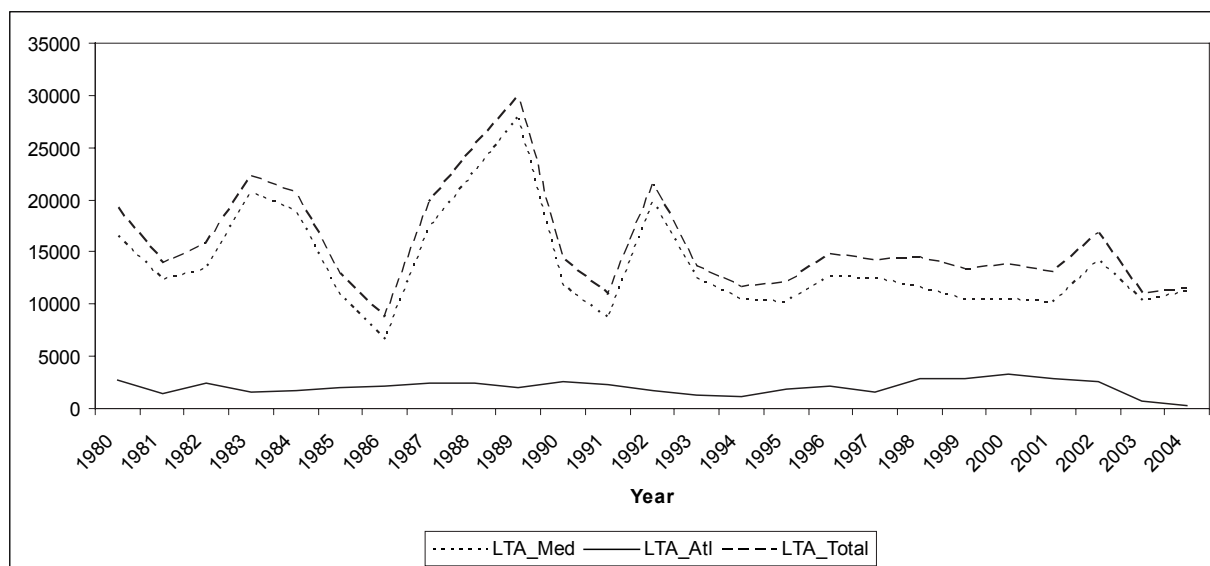


Figure 4. Catch distribution of Atlantic black skipjack in the Atlantic Ocean and Mediterranean Sea for 1980-2004 (t).

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